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EXAMINER

GILLESPIE, BENJAMIN

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/797,826
Filing Date: March 10, 2004
Appellant(s): HUYNH, DIEU DAI

Brian Bembenick
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/26/2010 appealing from the Office action mailed 4/24/2009.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application:

Claims 7-10, 12, and 13 stand rejected.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

| | | |
|--------------|-------------------|---------|
| 3,714,095 | REISCHL ET AL | 01-1973 |
| 5,334,690 | SCHAFHEUTLE ET AL | 08-1994 |
| 2002/0176968 | OZAWA ET AL | 11-2002 |
| EP 0 358 329 | BAGALIO ET AL | 03-1990 |
| 5,082,824 | RHOADES ET AL | 01-1992 |

(9) Grounds of Rejection

Issue A – The rejection of claims 7-8, 10, 12-13 under 35 U.S.C. 102(b) as being anticipated by Reischl et al (US 3,714,095).

Reischl et al teach an aqueous dispersion comprising (A) polyether and (B) polyester based polyurethane resin. Each resin is the reaction product of hydroxyl-functional material and aliphatic diisocyanate (Abstract; col 2 lines 3-6, and 28; col 3 line 23; col 10 lines 43-48 and 59-64).

Component (A) is based on polyethylene oxide, which commonly known in the art to be hydrophilic; (B) contains salt groups, which render said polyester water-dispersible, and both (A) and (B) are dispersed in the absence of solvent in amounts that correspond to appellants' claimed amounts (Col 1 lines 24-50; col 5 lines 47-62).

The final mixture of (A) and (B) is free of solvent and can be further combined with crosslinking agent (Col 5 lines 57-60; col 6 lines 15-23). Reischl et al explain the separate resins provide polyurethane that exhibits improved dispersion stability and the ability to re-disperse quickly if the resin settles (Col 1 lines 10-23).

It is noted that the prior art fails to explicitly teach the relied upon polyurethane can be used as a "dye receiving coating composition". Nevertheless, the position is taken that the relied upon polyurethane would inherently operate as a dye receiving coating, to the extent it is limited by claim 7, because it is identical to the claimed composition and like compositions share like properties. Moreover column 7 lines 39-43 teach the composition is useful in applications involving pigment and dyes.

Issue B – The rejection of claims 7-10, 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Schafheutle et al (US 5,334,690) in view of Bagaglio et al (EP 0,358,328) and Ozawa et al (US 2002/0176968).

Schafheutle et al teach aqueous polyurethane coatings based on solvent free, water-dispersible prepolymers and polyfunctional aziridine cross-linker (Abstract; col 5 lines 15-27, 53-55; col 7 lines 14-15, 19). The prepolymers are the reaction product of polyisocyanate and ionic group containing (a) polyether and (b) polyester polyol. Schafheutle et al fail, however, to teach separate prepolymers based solely on polyester and polyether respectively, as well as their corresponding amounts (Col 1 lines 4-12).

Bagalio et al also teach polyurethane that is produced from polyester and polyether based prepolymers. The production preferably comprises "combining a polyester prepolymer and a polyether prepolymer which have been made separately," since "no compatibility of the polyester polyol and the polyether polyol is required," i.e., separate prepolymers increase homogeneity (Abstract; page 3 lines 15-21). Therefore, it would have been obvious to create separate polyester and polyether prepolymers in Schafheutle et al since Bagalio et al teach it results in a polyurethane having decreased anisotropy. Still, Schafheutle et al and Bagalio et al fail to teach suitable amounts of (a) and (b).

Ozawa et al teach aqueous polyurethane coatings based on water dispersible prepolymers that are the reaction product of polyisocyanate and polyether polyol (Abstract, paragraph 11). Paragraph 24 goes on to teach that "surface feeling and gloss" of the coating is controlled by the amount of polyether relative to polyester in the polyurethane backbone, i.e., the ratio of (a):(b) acts a result effective variable. Thus, it would have been obvious to arrive at appellants' claimed range of (a):(b) since it has been held that discovering an optimum value for a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It is noted that the prior art fails to explicitly teach that the relied upon polyurethane is used as a “dye receiving coating composition”. Nevertheless, the position is taken that the rendered obvious polyurethane would operate as a dye receiving coating, to the extent it is limited by claim 7, because it is identical to the claimed composition and like compositions share like properties. Moreover Schafheutle et al teach the composition is useful in applications involving pigment and dyes, e.g., printing inks (Abstract).

Issue C – The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Reischl et al (‘095) in view of Rhoades et al (US 5,082,824).

Aforementioned, Reischl et al teach water-dispersible polyurethane that consists of polyether and polyester based resins and multi-functional chain extender; however patentees are silent in teaching chain extender that consists of polyaziridine (Col 1 lines 36-38).

Rhoades et al teach a water dispersible polyurethane composition that is the reaction product of an isocyanate-terminated prepolymer and multi-functional cross-linker (Abstract; col 6 lines 56-62). In particular, the chain extenders consist of compounds such as ethylene diamine, diethylene triamine, and polyaziridine, wherein the polyaziridine provides superior intra-molecular cross-linking, which provides improved solvent resistance for the cured coating (Col 7 lines 6-7, 36-38, and 51-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to include polyaziridine as the cross-linking agent in Reischl et al based on motivation that both compositions are water-dispersible polyurethanes and polyaziridine improves the performance properties of the resulting cured coating.

(10) Response to Argument

Response to issue A – The rejection of claims 7-8, 10, 12-13 under 35 U.S.C. 102(b) as being anticipated by Reischl et al (US 3,714,095).

Appellants argue the claimed invention is not anticipated by Reischl et al because although the prior art teaches a final solvent free blend of (a) and (b), said blend is not produced using two separate, initially solvent free, aqueous resins of (a) and (b).

In response, while it is noted that Reischl et al blend (a) and (b) together in the presence of solvent and water, *then* removes the solvent, claim 1 is still anticipated by the prior art. Claim 7 is not limited to a two component system comprising separate aqueous dispersions. Instead, claim 7 is only limited to a blend of solvent free resins (a) and (b). The fact that the prior art arrives at said blend by a different method does not change the fact that the final blend of the prior art is identical to the claimed blend.

Moreover, if appellants maintain that claim 7 contains limitations of blending two separate, solvent-free, aqueous dispersions, appellants are reminded that though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). With this understanding, the claimed final blend is not patentably distinct over Reischl et al.

Response to issue B – The rejection of claims 7-10, 12 and 13 under 35 U.S.C. 103(a) as being unpatentable over Schafheutle et al (US 5,334,690) in view of Bagaglio et al (EP 0,358,328) and Ozawa et al (US 2002/0176968).

Appellants argue the claimed invention is not rendered obvious by the prior art because the reliance on the secondary reference Bagaglio et al is “misplaced, as Bagaglio fails to teach a coating composition comprising two distinct polyurethane dispersions.”

In response, it is noted that Bagaglio et al fail to teach two distinct polyurethane dispersions. Had Bagaglio et al had disclosed this, the claimed invention would be rejected under 102(b) as being anticipated by Bagaglio et al.

Instead, the relevance of Bagaglio et al as a secondary teaching would be apparent to one of ordinary skill regardless of whether the prepolymers are blended in organic solvent, water, or the melt. The difference in polymer backbone architecture for polyether polyol and polyester polyol tend to cause phase separation when the two polymers are mixed together. This results in a greater amount of energy required to thoroughly mix the two. By combining a polyester prepolymer and a polyether prepolymer that have been made separately decreases the tendency of the polyether and polyester to phase separate, thereby facilitating the creation of homogeneous mixture.

Appellants also argue the claimed invention is not rendered obvious by the prior art because it would not be obvious to arrive at the claimed ratio of (a):(b) based on the teachings of Ozawa et al since Ozawa et al also "does not teach or suggest a blend of two distinct polyurethane dispersions." Again, it is noted that Ozawa et al fail to teach two distinct

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polyurethane dispersions. Had Ozawa et al disclosed this, the claimed invention would be rejected under 102(b) as being anticipated by Ozawa et al.

Instead, the relevance of Ozawa et al as a secondary teaching would be apparent to one of ordinary skill since it teaches the ratio of polyether:polyester in aqueous polyurethane backbones control the “surface feeling and gloss” of the resulting composition. Moreover since Schafheutle et al require segments of both polyester and polyether, one of ordinary skill would be motivated to find an optimal amount of each polymer in order to satisfy the relationship between surface feel – attributable to the polyether, and mechanical strength – attributable to the polyester.

Response to issue C – The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Reischl et al ('095) in view of Rhoades et al (US 5,082,824).

Appellants argue the claim 9 is not rendered obvious by the prior art based on the alleged deficiencies of Reischl et al. In response, the examiner redirects appellants' attention to

Response to issue A.

Appellants also argue that it would not be obvious to arrive at claim 9 because the relied upon chain extenders of Rhoades et al are not used with dye-receiving polyurethane but instead dye-permeable polyurethane.

In response, it should be noted that whether a resin is dye-receiving or dye-permeable is not controlled by the selection of chain extender; it is controlled by the polymeric backbone. Thus, one of ordinary skill would reasonably expect a chain extender to be useful with either type of resin, as long as said resin comprises the corresponding functional groups.

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Moreover, one of ordinary skill would have a reasonable expectation of success in using the extenders of Rhoades et al in Reischl et al since both systems crosslink isocyanate-functional polymer resins after said resins have been aqueously dispersed in water.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Benjamin J Gillespie/

Examiner, Art Unit 1796

Conferees:

/Christine Tierney/

Supervisory Patent Examiner, Art Unit 1700

/Milton I. Cano/ /M. I. C./

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